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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 12

Application Number: 09/855,132
Filing Date: May 14, 2001
Appellant(s): JACOBSEN, ERIC A.

Fred G. Pruner, Jr
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed April 13, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

Note: The status of claims 9, 19 and 29 has changed. After careful review of the record, the rejection of those claims under 35 USC 102 has been withdrawn.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

The rejection of the claims 9, 19 and 29 under 35 USC 102 is now withdrawn. These claims remain rejected solely under 35 USC 112, 2nd paragraph.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-8 and 10; 11-18 and 20; 21-28 and 30 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,175,550	van Nee	1-2001
6,535,501	Bohnke	3-2003

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 11 and 21 the limitation "discrete frequency transformation" is unclear, because it is not described in the specification or well known in the art. It is not clear whether it refers to discrete Fourier transformation, which is well known in the art, or to something else.

Similarly, in claims 14 and 24, the limitation "components of DFT" is unclear, because DFT (discrete frequency transformation) is not described in the specification or well known in the art.

Claim Rejections - 35 USC § 102

2. Claims 1-7, 10-17, 20-27 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by van Nee (US 6,175,550).

3. For the purpose of this rejection, DFT is interpreted as discrete Fourier transformation.

Regarding claims 1-3, 11-13 and 21-23, van Nee teaches a method, a system and storage medium instructions (Fig. 1 and 3:66-67, 4:1-17 and hardware and software implementations 10:34-48), comprising:

Basing a DFT (IDFT implementation 3:53-58, shown as 16 on Fig. 1 and 4:44-48) on a number of sub-carriers in a predetermined set of sub-carriers (reduced number of carriers X, where X<N, 6:10-14), one or more sub-carriers of the set assigned to modulate data (understood to mean modulating subcarriers with data) and the remaining sub-carriers of the set not assigned to modulate the data (scaling down the number of carriers from N to X, so only X carriers are modulated 5:58-67 and 6:1-9);

Performing DFT on the data to modulate the data (performing IDFT 16 on Fig. 1) and

Excluding from the transformation mathematical operations associated with the sub-carriers not assigned to modulate the data (because van Nee teaches reducing the number of modulated carriers from N to X, where X<N, to perform IFFT only on X carriers 6:10-14 to reduce implementation complexity 3:3-21, inherently the N-X carriers are not used and are excluded from the IFFT processing).

Regarding claim 4, van Nee teaches applying a weighting function (windowing 6:23-35) during DFT to perform symbol shaping (6:32-35).

Regarding claims 5, 15 and 25, van Nee teaches sub-carriers assigned to users (remote stations 74 on Fig. 5 and 7:40-61).

Regarding claims 6, 16 and 26, van Nee teaches forming an OFDM symbol (4:57-60).

Regarding claims 7, 17 and 27, van Nee teaches using the transformation to generate symbols at a rate defined by symbol generation interval (Symbol duration Ts 5:6-23); basing the DFT on the symbol generation interval (4:58-67); and

Using DFT to generate discrete modulated values for an interval that exceeds the symbol generation interval (5:6-22) to generate a cyclic extension (guard time 6:24-31).

of accumulation and multiplication (inherently part of IFFT technique, admitted as conventional IFFT technique in current application Fig. 2 and 5:3-8).

Regarding claims 14 and 24, van Nee teaches determining components of DFT independently from each other (orthogonal carriers 6:10-23).

Claim Rejections - 35 USC § 103

4. Claims 8, 18 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee in view of Bohnke (US 6,535,501).

Van Nee teaches all the limitations of the parent claims 1, 7, 11, 21 and 27.

van Nee does not teach transmitting symbols during the intervals that exceeds the symbol generation interval.

Bohnke teaches transmitting symbols during the intervals that exceeds the symbol generation interval (transmitting symbols during the guard band intervals 1:38-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add transmitting symbols during the intervals that exceeds the symbol generation interval of Bohnke to the system of van Nee to improve the system spectral efficiency.

(11) Response to Argument

112, second paragraph rejection.

On page 14 of the Brief, Appellant argues that the Examiner has failed to show why the claims and thus, the phrase "discrete frequency transformation" fails to satisfy either of these requirements of 35 USC 112, 2nd paragraph.

Examiner respectfully disagrees.

The claims do not distinctively define the meats and bounds of the subject matter sought to be protected.

The expression "Discrete Frequency Transformation" is not defined in the specification with adequate clarity, and Appellant failed to provide evidence to show that Discrete Frequency Transformation is well known in the art.

On page 14 of the Brief, Appellant argues that "lines 23-25 on page 9 of the specification make it clear that the phrase "discrete frequency transformation" may refer to either an Inverse Discrete Fourier Transformation or a Discrete Fourier Transformation".

Examiner respectfully disagrees.

Lines 23-25 on page 9 of the specification discloses "the term "discrete frequency transformation", as used in the context of this application, may mean either a Discrete Frequency Transformation or an Inverse Discrete Frequency Transformation".

There is no clear statement in the specification that refers to expressing Discrete Frequency Transformation as meaning Discrete Fourier Transformation as Appellant now states in the Arguments.

Appellant had ample opportunity to clarify this issue by an appropriate amendment to the specification in the responses to the First (01/28/04) and Final (03/03/04) Office actions but failed to do so.

On page 14 of the Brief, Appellant argues that the Examiner refused to enter the amendment after final that clarifies the meaning of Discrete Frequency Transformation.

Examiner respectfully disagrees.

The Amendment, as proposed, does not clarify what Discrete Frequency Transformation means, because it does not define Discrete Frequency Transformation as Discrete Fourier Transformation.

102 and 103 rejections.

On pages 16, 19 and 20 of the Brief, Appellant argues that "van Nee fails to teach the exclusion of mathematical operations that are associated with subcarriers that are not assigned to modulate the data".

Examiner respectfully disagrees.

Exclusion of mathematical operations associated with dropped carriers is an inherent part of van Nee system, because van Nee teaches scaling down the number of carriers/excluding carriers to reduce implementation complexity of his system (3:3-21). Scaling down the number of carriers

clearly means selecting only a certain number of carriers to use in the modulation process; and scaling down unambiguously means that non-selected carriers are not going to be included in the modulation process. The alternative of performing mathematical operation with no input subcarriers, suggested by Appellant on page 18 of the Brief, has no basis because it contradicts the premise of scaling down the number of carriers.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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May 10, 2004

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